

## A THREAT DISPLAY OF THE NORTHERN SAW-WHET OWL (*Aegolius acadicus*)

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Despite a voluminous literature on owls of the world (Burton 1973, Clark et al. 1979, Mikkola 1983, Johnsgard 1988, Voous 1988) much remains to be learned about the display behaviors of many strigids (Holt et al. 1990), particularly those inhabiting remote areas. I describe herein a threat behavior sequence of the Northern Saw-whet Owl (*Aegolius acadicus*) not previously reported in recent field studies of this species (Hayward and Garton 1984, Cannings 1987).

### OBSERVATIONS

The observations were made on three captive adult owls (Collins 1961, 1963) captured in southern Michigan during the winters of 1960–61 and 1962–63. One female owl was maintained indoors in an area of high human activity and the other two (1 male, 1 unsexed) in an enclosed porch with little human contact. All were tethered on block perches by jesses and a short leash and fed laboratory mice (*Mus musculus*).

When approached within 2 m the owls often became excited and exhibited the preflight fright reaction described by Catling (1972) for untethered birds. This included head bobbing, head turning, foot shifting and eventual escape flight. Only once, stimulated by the calling of a captive kestrel (*Falco sparverius*), was the extreme sleeked-feather concealing pose (Catling 1972:Fig. 1, Holt et al. 1990) observed. On at least 15 occasions, however, each of the three owls exhibited a distinct fluff up, bow, buzz (FUBB) display sequence in reaction to similar such human approach. The FUBB display was not observed in newly captured individuals but only after the owls had been in captivity for a minimum of one week.

The sequence (Fig. 1) began with a general fluffing up of the body plumage and exaggerated upright stance. It was followed by a forward bow of the body and head. It ended with the raising of the head and a brief insect-like buzz vocalization. In the first stage, the feathers of the upper belly and breast were fluffed up and spread laterally (Fig. 2a) increasing the apparent size of the bird. This was quickly followed by the extension of the legs to raise the upright body (Fig. 2b). The wings and tail did not appear to be extended during this sequence, nor was there any apparent piloerection of the dorsal body feathers, head, or face. In the second stage, the body was bent forward until the head was facing downward and the bill was nearly at the level of the perch substrate (Fig. 2c, d). At this point, with the body still in the near horizontal position, the head was raised so that it again faced forward toward the intruder (Fig. 1) and the buzz vocalization was emitted. Following this the owl returned to the normal upright stance and sometimes began the fright reaction and attempted flight. In no case was the FUBB display immediately repeated although it could be again elicited

by the observer moving away for a couple of minutes and then approaching the owl again.

### DISCUSSION

Some components of the FUBB display sequence resemble behaviors noted in other owl species under various conditions. The extreme upright stance (Fig. 2b), not accompanied by plumage fluffing, was noted many times in a hand-reared captive juvenile Eastern Screech-Owl (*Otus asio*) when inquisitive and exploring its environment (Fig. 3). A similar upright defense posture with feather erection occurs in the Barking Owl (*Ninox connivens*; Fleay 1968) but that species also includes wing spreading not noted in *Aegolius*. Similarly, fluffing of the body plumage accompanied by sideways swaying and a raising and lowering of the body is part of a threat display of the Tropical Screech-Owl (*Otus choliba*; Thomas 1977). A more generalized fluffing of the plumage at the approach of a person or foreign object has been noted in several species of strigids in captivity (pers. observation).

Threat displays of the Barn Owl (*Tyto alba*; Walker 1974:2, Bunn et al. 1982, pers. observation), Sooty Owl (*Tyto tenebricosa*; Fleay 1968), Masked Owl (*Tyto novae-hollandiae*; Fleay 1968) and Asian Bay Owl (*Phodilus badius*; Wells 1986) include an arching of the head forward until the bill faces the ground or almost backward between the legs. In these species, this display is accompanied by arching the spread wings and usually a side-to-side rocking of the body with a shifting from one foot to the other. In Barn Owls, a high intensity expression of this display is accompanied by a rapidly repeated keck-keck-keck vocalization or bill snapping (pers. observation). In the Saw-whet Owl, there is: 1) no spreading or arching of the wings, 2) a pronounced forward bending of the body (Fig. 1, 2d) and not just an arching forward and lowering of the head, and 3) no lateral movement of the body or feet. In the Bay Owl, the performance is terminated by the head being flung up and forward emphasizing the pale facial disk, large dark eyes and open bill (Wells 1986). In the Saw-whet Owl, the raising of the head is deliberate rather than rapid and the buzz vocalization accompanies this head movement. Although FUBB display components are similar to parts of displays of other tytonid and strigid owls, the total sequence seems unique to Saw-whet Owls. No similar display has been recorded to date in field studies of the congeneric Boreal Owl (*Aegolius funereus*, Mikkola 1983, Hayward et al. 1987).

The function of this display and the context in which it would be utilized in wild owls is unclear. It is likely to be a form of threat display and the buzz component comparable to the hissing sounds reported for a number of species including some owls (Bent 1938, Sibley 1955, Fleay 1968, Mikkola 1983, Johnsgard 1988). The previously described concealing (Catling 1972) or freezing (Taylor



Figure 1. The complete fluff up, bow, buzz (FUBB) display sequence of the Saw-whet Owl. From left to right, resting pose, feather fluff and upright stance, bow, and bow with raised head when buzz is emitted.



Figure 2. Fluff up, bow, buzz (FUBB) display components. a) Initial fluffing of breast feathers, b) full feather fluff and upright stance, c) start of bow, d) full bow with bill facing down. Not shown is raised head position which is accompanied by buzz vocalization.



Figure 3. Upright inquisitive stance of juvenile Eastern Screech-Owl.

1962) posture and fright reaction (Catling 1972) in *Aegolius* are more frequently observed in approach situations. However, there are also numerous reports of wild Saw-whet Owls allowing very close approach by humans with the owls showing no signs of either defense or escape (Wilson 1931, Bent 1938). The FUBB display may be utilized in situations when easy escape is not an option. This would account for the FUBB display not being seen in newly captured birds but only in ones that had adjusted to captivity and their inability to escape. In support of this, a female Saw-whet Owl cornered in a nest box (Santee and Granfield 1939) showed the fluffed out breast feathers typical of the first stage of the FUBB display; the bird subsequently left the box without any other FUBB components being noticed. Michael and Michael (1928) reported a Saw-whet Owl perched just inside the opening of a nest cavity to emit a buzzing vocalization which resembled "the sizzling of water on a hot stove" when startled. However, this was certainly the begging vocalization of a nestling (R.J. Cannings, pers. comm.) rather than an adult vocalization as suggested by Michael and Michael (1928). No FUBB components were noticed in other captive Saw-whet Owls even when stimulated to the point of attack (Schaeffer 1973). Further field studies of wild owls may help verify the exact function and context of this display.

**RESUMEN.**—Una conducta de amenaza es descrita para el búho *Aegolius acadicus*. La conducta incluye una postura erguida con un aumento de volumen del cuerpo por expansión de las plumas, seguido por una inclinación hacia adelante y una vocalización parecida a un zumbido.

[Traducción de Ivan Lazo]

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#### LITERATURE CITED

- BENT, A.C. 1938. Life histories of North American birds of prey. Part 2. Bull. No. 170, U.S. National Museum, Washington, DC U.S.A.
- BUNN, D.S., A.B. WARBURTON AND R.D.S. WILSON. 1982. The Barn Owl. Buteo Books, Vermillion, SD U.S.A.
- BURTON, J.A. 1973. Owls of the world, their evolution, structure and ecology. E.P. Dutton & Co. Ltd., London, U.K.
- CANNINGS, R.J. 1987. The breeding ecology of Northern Saw-whet Owls in southern British Columbia. Pages 193–198 in R.W. Nero, R.J. Clark, R.J. Knapton and R.H. Hamre [Eds.], Biology and conservation of northern forest owls: symposium proceedings. Gen. Tech. Rep. RM-142, U.S. Forest Service, Rocky Mountain Forest and Range Experiment Station, Fort Collins, CO U.S.A.
- CATLING, P.M. 1972. A behavioral attitude of Saw-whet and Boreal Owls. *Auk* 89:194–196.
- CLARK, R.J., D.G. SMITH AND L.H. KELSO. 1979. Working bibliography of owls of the world. Sci. Tech. Ser. 1, National Wildlife Federation, Washington, DC U.S.A.
- COLLINS, C.T. 1961. Tail molt of the Saw-whet Owl. *Auk* 78:634.
- . 1963. Notes on the feeding behavior, metabolism, and weight of the Saw-whet Owl. *Condor* 65: 528–530.
- FLEAY, D. 1968. Nightwatchmen of bush and plain. Jacaranda Press, Brisbane, Australia.
- HAYWARD, G.D. AND E.O. GARTON. 1984. Roost habitat selection by three small forest owls. *Wilson Bull.* 96: 690–692.
- , P.H. HAYWARD AND E.O. GARTON. 1987. Movement and home range use by Boreal Owls in Central Idaho. Pages 175–184 in R.W. Nero, R.J. Clark, R.J. Knapton and R.H. Hamre [Eds.], Biology and conservation of northern forest owls: symposium proceedings. Gen. Tech. Rep. RM-142, U.S. Forest Service, Rocky Mountain Forest and Range Experiment Station, Fort Collins, CO U.S.A.
- HOLT, D.W., R. KLINE AND L. SULLIVAN-HOLT. 1990. A description of "tufts" and concealing posture in Northern Pygmy Owls. *J. Raptor Res.* 24:59–63.
- JOHNSGARD, P.A. 1988. North American owls. Smithsonian Institution Press, Washington, DC U.S.A.
- MICHAEL, C.W. AND E. MICHAEL. 1928. Behavior of Saw-whet Owls in Yosemite Park. *Condor* 30:323–324.
- MIKKOLA, H. 1983. Owls of Europe. T. and A.D. Poyser, Calton, U.K.
- SANTEE, R. AND W. GRANFIELD. 1939. Behavior of the Saw-whet Owl on its nesting grounds. *Condor* 41:3–9.
- SCHAEFFER, F.S. 1973. Tactile bristles of Saw-whet Owls are sensitive to touch. *Bird-Banding* 44:125.
- SIBLEY, C.G. 1955. Behavioral mimicry in the titmouse

- (Paridae) and certain other birds. *Wilson Bull.* 67:128–132.
- TAYLOR, R.R. 1962. Fall Saw-whet Owl concentrations in Ontario. *Blue Jay* 20:118–119.
- THOMAS, B.T. 1977. Tropical Screech Owl nest defense behavior and nestling growth rate. *Wilson Bull.* 89:609–612.
- VOOUS, K.H. 1988. Owls of the northern hemisphere. Massachusetts Institute of Technology Press, Cambridge, MA U.S.A.
- WALKER, L.W. 1974. The book of owls. A.A. Knopf, New York, NY U.S.A.
- WELLS, D.R. 1986. Further parallels between the Asian Bay Owl *Phodilus badius* and *Tyto* species. *Bull. Br. Ornithol. Club* 106:12–15.
- WILSON, E.S. 1931. Tamelessness of Saw-whet Owl (*Cryptoglaux acadica acadica*). *Auk* 48:266–267.

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### NATAL ORIGINS AND WINTER SITE FIDELITY OF ROUGH-LEGGED HAWKS WINTERING IN CALIFORNIA

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Rough-legged Hawks (*Buteo lagopus*) are a relatively common winter resident in California (Small 1974), but to date there has been no information published on the breeding areas and movements of California's wintering population. Therefore, we analyzed encounters of banded birds to document natal origins, site fidelity, and migratory movements of Rough-legged Hawks wintering in California.

All currently known banding encounters ( $N = 16$ ) involving Rough-legged Hawks in California were analyzed for this study. The Bird Banding Laboratory, U.S. Fish and Wildlife Service, provided 13 banding encounters of Rough-legged Hawks recovered in California or banded in California and recovered elsewhere between 1966 and 1991. In addition, three recaptures of banded birds were used in this study. P.H. Bloom captured and/or recaptured six birds using bal-chatris (Berger and Mueller 1959) baited with two domestic House Mice (*Mus musculus*) or one House Mouse in combination with other domestic rodents or House Sparrows (*Passer domesticus*; Bloom 1987).

Four encounters (Nos. 1–3 and 5) were of nestling Rough-legged Hawks banded on their natal areas and recovered during the winter period in California (Table 1). Three nestlings were banded in July at three different locations on the Colville River, Alaska, and the fourth nestling was banded in August at Franklin, Banks Island, Northwest Territories. A fifth banding encounter from a natal area was an immature (HY) bird (No. 4) that was banded September 1988 near Delta, Alaska and found

dead August 1990 near Santa Cruz, California. The summer recovery date for bird No. 4 is atypical because it was found dead, and it is not known when the bird died. The four Alaska birds were recovered at different locations in California (Table 1).

Ten birds were banded in California and one bird was banded in Nevada during the winter period between November and February; all were recovered between December and April (Table 1). Of these 11 birds, 4 (36%, Nos. 9, 10, 15 and 16) were banded in California and recovered or recaptured in the same Lat-Long block where banded. Bird No. 15, banded by P.H. Bloom as an HY in December 1977, was recaptured in December 1978 in the same field where initially banded, while No. 16 was recaptured in January 1988 within 1.6 km of the banding location of February 1987 (L. Spiegel and P. Detrich pers. comm.). Three birds (27%, Nos. 6, 12 and 14) were recovered one Lat-Long block from the initial banding block, and four birds (36%, Nos. 7, 8, 11 and 13) were banded at different locations in California and Nevada and recovered at different locations in California, Oregon, and Nevada.

The length of time between banding and recovery for the 16 encounters averaged  $540 \pm 697$  SD d. Young of the year (L and HY) ( $N = 7$ ) birds averaged  $413 \pm 304$  SD d between banding and recovery, while older birds (AHY, SY, ASY, U) banded on the wintering grounds averaged  $640 \pm 903$  SD ( $N = 9$ ) d. The difference between recovery periods for young of the year and older birds was